PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
DEGREE CREDIT COURSE

__X__ Transfer course __X__ A.A. degree applicable course

(check all that apply)

COURSE NUMBER AND TITLE: AP E 108 Digital Electronics

UNIT VALUE: 4

MINIMUM NUMBER OF SEMESTER HOURS: 96

BASIC SKILLS REQUIREMENTS:

Appropriate language and computational skills.

ENTRANCE REQUIREMENTS

PREREQUISITE: Apprenticeship Electrician 107

COREQUISITE: None.

RECOMMENDED PREPARATION: None.

SCOPE OF COURSE:

Introduction to digital electronic technology and electronic equipment. Instruction includes basic digital systems, binary and decimal numbering systems, decision-making logic circuits, Boolean Algebra, flip-flops, counters, shift registers, encoders, decoders, ROMs, DC to AC converters and organization of these component blocks to accomplish manipulation of data. CSU

SPECIFIC COURSE OBJECTIVES:

The student will be able to:

1. Justify the advantages of using digital technology.
2. Identify the major application of digital techniques in electrical and electronics equipment.
3. Apply the principles of the numbering system and make conversions between decimal and binary number systems.
4. Explain the functioning of digital logic gates.
5. Identify the major components used in implementing digital circuits and explain how they operate.
6. Identify the most frequently used combination logic circuits and explain their operation.

7. Anticipate problems and how they may be resolved through the application of digital system organization and sequencing schemes.

8. Identify types of data conversion and explain how they function, giving examples of their operation.

9. Explain functioning of a programmable logic control system.

10. Apply principles of programming logic and create sample programs.

11. Explain characteristics and advantages of process control in manufacturing.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

I. Digital Basics
   - A. Electronics: Analog and Digital
   - B. Numbering Systems and Codes
   - C. Logic Gates
   - D. Logic Circuit Simplification with Boolean Expressions
   - E. Integrated Circuit Construction
   - F. Bipolar and Mos Integrated Circuits
   - G. Troubleshooting Logic Gates
   - H. Safety

II. Digital Circuits
   - A. Decoders and Encoders
   - B. Multiplexers, Demultiplexers, Comparators and Parity Circuits
   - C. Set-Reset and Date-Type Flip-Flops
   - D. JK Flip-Flop and Timer Circuits
   - E. Registers
   - F. Counters
   - G. Arithmetic Operations and Circuits
   - H. Memory Circuits and Programmable Logic Devices
   - I. Analog and Digital Signal Converters
   - J. Safety

REQUIRED READING:

Alerich, Walter N. and Stephen L. Herman. Industrial Motor Control. Third edition. Albany, NY: Delmar, 1993.

Digital Electronics. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee, 1994.

Fourth Year Student Workbook. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee, 1996.

NJATC Code Calculations. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee, 1993.

Quik-Lab III Digital Diskettes. Mountain View, CA: Malvino Publishing, 1996.

Rockis. Solid State Fundamentals for Electricians, 2nd ed. Homewood, IL: ATD Publication, 1993.

SUGGESTED READING:

None.

REQUIRED WRITING:

Completion of written assignments in student workbook which are at least one paragraph in length.

OUTSIDE ASSIGNMENTS:

Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short term classes.

Outside assignments include completion of reading assignments, student workbook applications and attendance at union and JATC meetings as required.

INSTRUCTIONAL METHODOLOGY:

Check all that apply:
_X_ lecture
_X_ laboratory
____ lecture-laboratory combination
____ directed study

This course may be offered as a distance education course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.
Yes _____ No _X___

If yes, check all that apply. (See guidelines for preparation for definitions.)
____ telecourse
____ mediated instruction
____ computer assisted instruction

GRADING POLICY AND STANDARDS (include methods of determining whether the stated objectives have been met by students):

5%	Workbook	A = 90-100
10%	Participation	B = 83-89
70%	Unit exams	C = 75-82
15%	Final exam	F = 74 and below

IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?
Yes _X_ No ___ Number of times course may be taken for credit: _2_

If yes, identify specific provision of Title 5 Division 2 section(s) 55761-55763 and 58161 which qualifies course as repeatable:
58161 Part C IIA

CONTACT PERSON: Director, Vocational Programs, Ext. 2286